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Abstract

Disability rates are trending higher over time. This study examined the relationships between types of disability (mental, physical and disease), work related factors (yes, no and classification), gender and length of absence. Clear definitions and use of standard classification for diagnostic categories within actual Short Term Disability (STD) claims data from self-insured workplaces were utilized; this approach is, to the knowledge of the author, unique in the literature to date.

Data consisted of all claims (N=708) from 2008-2010 for three similar organizations. ANOVAs were used to compare the average duration of absence. Results demonstrated no significant difference in durations of STD claims between gender. When work related factors, or mental health diagnoses were present, the average duration of absence was significantly longer.

The impact of work related issues and the confirmation that these issues contribute to longer absence durations, demonstrates the importance of addressing these issues within the workplace, preferably before a disability results.
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The Prevalence and Contribution of
Work-Related Issues in Short Term Disability Claims

Introduction

Sick leave (absence from work covered by a Short Term Disability or salary continuance program) has become an increasing concern for Canadian employers due to rising costs, loss of productivity and other resultant adverse affects of employee absence on the workforce and corporation. Work plays an important role for the individual, particularly in Western cultures, establishing status, developing self-esteem and maintaining quality of life. Over the past 20 years, the nature of work has continued to evolve and economic adjustments have impacted job quality and stability. There has been a documented increase in the prevalence of sickness related absence, and societal norms at large are more accepting of disability (Cohen & Kinnersley, 2005) in terms of visible or reported limited capacity due to illness or injury. In the past two decades, much research has been directed towards examining the complex individual and workplace factors associated with both work-related and non-work related absence. Theories have been postulated to explain the interplay of workplace factors with the individual seeking to explain the variance in personal experience. Factors contributing to workplace disability need to be understood to allow development of strategies to prevent workplace disability.

While many categories of disabilities are reported and have been investigated, common mental disorders have recently emerged as one of the primary categories of work disability. This change has prompted a shift in researcher attention, with an increased focus on examination of potential work-related factors contributing to this trend. Areas requiring further investigation have been identified, particularly with respect to understanding of the interplay of individuals within their workplace and antecedents to filing claims for sick leave. There are limitations in the current body of research; specifically, most studies have focused on one condition, and
predominately on work related injuries. With few exceptions, studies rely on subjective surveys to identify disability incidence instead of objective medical diagnostic criteria. A lot of research has pulled information from population health surveys. In addition, there has been no observed objective, consistent classification utilized to differentiate between work related, psychosocial or workplace factors; often terms are interchanged and factors grouped together. The objective of this research was to provide knowledge and understanding of relevant factors that employers can impact, as well as to prompt further development of tools and strategies to assist employers to prevent or avoid, in as much as possible, contributing to the causes of sick leave.

**Role of Work**

Western Countries are referred to as ‘work oriented cultures’. Fryers (2006) explains that in a work oriented culture, there are moral pressures to work and work is necessary to earn a living. In such a culture, work is valued for itself, and what an individual does is part of how they are identified. “For many, it may be the principle source of personal identity” (Fryers, 2006, p.2). To be socially accepted, individuals must work hard, provide for their families and contribute to society. In fulfilling duties per the culture, an individual gains dignity, social status, respect, and benefits from work (Fryers, 2006).

Each workplace has a culture unto itself. When we join a workplace, we become part of a workplace community, part of the community’s own distinct culture and social network (Fryers, 2006). Social support in the workplace is beneficial to an individual and is an important component of overall job satisfaction (Ducharme, & Martin, 2000).

Work fulfills many roles and needs in our lives and may contribute positively to our overall health and well being (Cohen & Kinnersley, 2005). For many, work means access to healthcare and income. In addition to contributing to the economy and corporation, work contributes significantly to individual quality of life (Jiang & Hesser, 2006; Van Oostrom,
Anema, Terluin, de Vet & van Mechelen, 2008). Being physically and mentally active is important for our general health (Holmgren & Ivanoff, 2004). Work provides a structure, gives us purpose, and assists us to organize our lives (Fryers, 2006; Holmgren & Ivanoff, 2004). Fryers (2006) commented on the adverse effects of retirement on some individuals where loss of work identity resulted in untoward consequences, including ill health. Achieving goals and doing things well provides an individual with satisfaction and self-esteem (Fryers, 2006; Holmgren & Ivanoff, 2004; Tennant, 2001).

The work environment is changing and researchers are examining the importance of work for health from the perspective of adverse consequences on the individual (Sullivan & Adler, 1999). Many authors’ work has sought to examine specific work-related factors and effects on individual health status. Heerkens et al. (2004) commented on the personal response of the human organism to work and utilized The International Classification of Functioning, Disability and Health (ICF, WHO 2001) and the Van der Beek model of workload and work capacity to explain work-related interactions (Heerkens, Engels, Kuipers, Van Der Gulden, & Oostendorp et al., 2004). This model of workload and work capacity depicts the interactions between work demands and decision latitude, short and long term effects and work capacity. Our work relationship needs to be balanced (Heerkens et al., 2004) between inherent workplace challenges and our capacity or self perceived status to meet the demands (Holmgren & Ivanoff, 2004).

Work has also been shown to be beneficial in recuperation. For those with disabilities, work aids in recovery (Cohen & Kinnersley, 2005; Van Oostrom et al., 2007). Employed individuals with disabilities experience less frequent mental distress than comparable unemployed individuals with disabilities (Okoro, Strine, McGuire, Balluz, & Mokdad, 2007). Individuals with terminal illness who choose to continue working provides a clear example of the personal value of work. Westaby et al. (2004) examined the influences of those who choose to
continue to work with terminal illness and found that the majority do so for intrinsic, rather than
extrinsic reasons such as income (Westaby, Versenyi, & Hausmann, 2005, p.3).

**Changing Workplace**

There have been significant changes in the nature and composition of employment over
the last twenty years, with a decrease in 'blue collar' work and a commensurate increase in
'white collar' work (Sullivan & Adler, 1999). In addition, changes in the labour market through
the same time period, including downsizing and right sizing (Engstrom, & Janson, 2007), have
changed the workforce structure in industrialized economies (Tennant, 2001). With fewer
employees, demands have increased for the remaining workers (Engstrom & Janson, 2007)
causing job intensification, time pressures, increased psychological stresses and emotional work
(Sullivan & Adler, 1999). The mental component of work is also influenced by changes in the
amount and quality of work compensation (Sullivan & Adler, 1999) as well as the shifting social
and policy context.

Whereas, previously, a worker may have felt secure and remained with an employer their
entire working life, the social contract between employee and employer has changed (Sullivan &
Adler, 1999); employees feel less job security (Tennant, 2001) and authors have documented a
commensurate rise in sick leave. For example, the Swedish experience of sick leave was noted to
have risen during the 1990’s when there was downsizing by large corporations (Engstrom &
Janson, 2007), particularly in industries such as the public sector where staff reductions have
meant increased workloads (Holmgren & Ivanoff, 2004; Tennant, 2001).

Studies have also documented the relationship between work environment and sickness
absence. The Whitehall study demonstrated that low job control leads to increased health related
sickness absence (Sullivan & Adler, 1999). Other studies have further contributed that job
insecurity affects sickness absence (Stansfield, Head, & Ferrie, 1999). Employees increasingly
perceive work as the primary source of stress (Tennant, 2001). While working conditions can contribute to illness and influence "an employee’s perception of their work ability and decision to be absent” (Eriksen, Bruusgaard, & Knardahl, 2003, p.271) there are a number of other factors involved in this trend.

**Societal Norms / Acceptance**

During this period of changing economic and workplace dynamics, there have also been further shifts in societal norms which may have contributed to the increased prevalence and changing nature of sick leave claims. Our view of absence is affected by cultural influences, shared values and attitudes towards work (Stansfield et al., 1999). Compared to previous generations, there is greater acceptance of, and lesser stigma assigned to, illness and disability (Cohen, & Kinnersley, 2005).

There exists a sociocultural trend towards reporting symptoms (Butler, & Liao, 2002) and medicalization of subjective complaints. The general population is accessing mental health services much more than in the past; treatments are felt to be safer with less side-effects and consequently, these conditions are more often diagnosed (Raderstorf, & Kurtz, 2006).

Research has consistently demonstrated a higher incidence of disability for women than men (Dellve et al., 2001). Women reportedly perceive their health as worse, take more sick time and consume more healthcare than men (Holmgren & Ivanoff, 2004). Authors have explored factors related to this finding seeking to explain the variance. Holmgren and Ivanoff conducted focus groups with women on disability, and commented on the different roles women play in society concluding that their “total workload including paid and unpaid work is far greater than men” (Holmgren & Ivanoff, 2004, p.213). However, while noting different hazard exposures, many studies which have sought to demonstrate and explain gender differences in specific examination of claims, data have been inconclusive (Bresland et al., 2007; Haahr et al., 2007).
Thus the overall statistical trend and gender related differences have not been well explained by research.

Societal norms and demands impact the individual experience including in the workplace. Our perception, socialization (Butler & Liao, 2002), responsibilities outside of work, and interests all contribute to work satisfaction. An individual’s work satisfaction and perception have been linked to reporting of disability. Disease concepts alone do not explain sick leave behaviour, nor do these concepts correlate with severity of the disability (Eriksen et al., 2003). Authors have sought to examine the factors associated with individual experience and behaviour. In studies examining research of combined stressors, Tennant (2001) found that when an individual has stresses at home and at work, often it is perceived that the home issues result from ‘spill over’ of work problems. In the public at large there is an increasing victimization mentality which leads people to place the blame for things externally (Raderstrof & Kurtz, 2006). “Sick leave is a complex clinical, personal and social phenomenon and the presenting complaint is not always the main issue” (Fryers, 2006, p.15).

**Sick Leave Prevalence / Data**

International research and statistics from developed countries demonstrate that disability prevalence and costs to corporations and governments are significant and these costs continue to rise. Sickness absence is a major public health and economic concern (Henderson, Glozier, & Holland, 2005). One hundred and seventy million working days in the UK were lost in 2003 from sickness absence, an increase of 10 million from 2002, with an annual cost of $25 billion in benefits, and an additional cost to industry of $11 billion (Henderson et al, 2005). Seventy percent of the costs are accrued by the relatively small proportion of longer term absences wherein there is a lower probability of an eventual return to work.
In Sweden, sickness absence has increased dramatically, public costs have doubled and long term absence has increased, especially for young women (Holmgren & Ivanoff, 2004).

Sweden’s sickness absence is one of the highest rates in the world (Thulesius, & Grahn, 2007). Of the 5.6 million adults of working age in 2000, 62.4% of adults worked, 4.7% were unemployed, 11.8% were on sick leave and 21.1% were in receipt of a disability pension (Fryers, 2006). The Netherlands also have a high rate of permanent disability. In 2001 13% of adults were in receipt of a full or partial disability, and in 1999 rates represented a cost of 2.6% of the GNP of Holland (Post, Krol, & Groothoff, 2005).

Sickness absence is a major problem in Western Societies as well (Eriksen et al., 2003) with significant costs to employers, whether an employee is absent due to work injury, illness or personal issue (Hall, 2007). Industry studies in the US have shown that absences cost 14.2% of payroll (Hall, 2007) and employers incur additional costs related to training of replacement staff (Janssen et al., 2003). In the US, work related injury and illness is also a significant contributor to absence and work related disability with 4.2 million injuries (2004) accounting for 4.8 injuries per 100 FTE. In Canada 1 million injuries in 2004 represented 1 out of every 38 employees (Breslin et al., 2008). Work related injury kills 1.1 million worldwide annually (Sullivan & Adler, 1999). With the ageing population, the proportion of workers with disabilities will continue to increase (Okoro et al., 2007) creating potential impact for employers in productivity and additional costs and consequences for employees.

Consequences for Employees

Work absence also has significant consequences for the individual, including reduced income, dismissal and social isolation (Post, Krol, & Groothoff, 2005). While debate regarding whether absence reflects ill health or if reduced health status is a result of absence continues
(Stansfield et al., 1999), there is significant literature discussing the deterioration health when off work, due to loss of identity (Fryers, 2006), income and access to healthcare.

Work is an important predictor of quality of life. Health related quality of life “refers to those aspects of general subjective quality of life affecting a person’s health or health perceptions” (Jiang & Hesser, 2006, p. 2). Quality of life research has clearly documented that disability and work absence adversely affect quality of life. “It is estimated that 41 million American adults over the age of 18 experience physical or mental impairment that affects their quality of life” (Jiang & Hesser, 2006, p. 4). Poor quality of life is predicted by disability, inability to work and unemployment (Jiang & Hesser, 2006). In the US, work represents access to healthcare through employer based insurance, social networks, income and meaning (Jiang & Hesser, 2006). Those in sociodemographically disadvantaged groups (lower income, education, younger workers, those with less education and the working disabled population) are particularly vulnerable to these effects. “Ill health and mortality vary by socio-economic status” (Stansfield et al., 1999, p.425). The effects of work absence and disability are significant.

Work disability is associated with economic and personal costs to the individual (Henderson, Glozier, & Elliott, 2005; Schroer, Janssen, Van Amelsvoort, Bosma, Swaen, Nijhuis, & van Eijk, 2005) as well as poor long term outcomes. Prolonged absence and delayed return to work lead to critical financial and social problems and have adverse affects on family life (Holmgren & Ivanoff, 2004) through loss of social structure, loss of well being and loss of meaningful activity (Van Oostrom, Anema, Terluin, de Vet, & van Mechelen, 2008). The longer an absence, the less probability the employee will ever return to full-time working status (Haahr, Frost, & Anderson, 2007; Henderson et al., 2005; Van Oostrom et al., 2008).

Individuals on sick leave lose status and are subject to stigma regarding disability, as well as perceived culpability regarding any effects to others due to their absence. Sick leave, even in
liberal countries such as Sweden “often involve shame and distrust” (Thulesius, & Grahn, 2007, p.2). There are also affects on the work population as a whole. The absence of a co-worker due to disability places additional demands on those remaining at work.

**Disability**

There has been a shift in the pattern of reported claims for disability benefits. Traditionally, the highest proportion of claims has been related to musculoskeletal conditions. In Sweden, musculoskeletal conditions and injury related disability remain the most prevalent reason for sick leave (Holmgren & Ivanoff, 2004). This pattern has been changing and in some countries mental health related conditions have surpassed musculoskeletal conditions as the most prevalent disability issue. In the UK a major shift was seen by 2004 with 44% of claims mental health related and 26% due to musculoskeletal disability (Cohen, & Kinnersley, 2005).

Subjective health complaints (such as pain and fatigue) are an increasing component of conditions classed as mental disorders and the proportion of sick leave caused by subjective health complaints has risen (Eriksen, Ihleback, Jansen, & Burdof, 2006). There is much discussion regarding the relationship between mental health and disability, and opinions differ as to which comes first. Poor mental health may lead to disability or visa versa (Okoro et al., 2007). Authors have commented on the effect of depression on work, noting that individuals with depression report work impairment (Gilmour & Patten, 2007; Williams & Schouten, 2008) and observe that depression is a risk factor for occupational disability (Crisp, 2007). Anxiety disorders have also been shown to be associated with reduced participation in the labour force (Waghorn et al., 2005). On the causal side, acute stressors related to work have been related to mental health symptoms (van der Ploeg et al., 2003). There is also evidence that physical risk factors determine or predict disability in the acute phase and psychosocial factors explain or
predict disability in the sub-acute or chronic phase (Franche & Krause, 2002). The trend is significant, independent of the chicken or egg debate.

**Demand / Coping Theories**

Researchers and theorists have sought explanations for the observed trends in sick leave. One of the most oft cited theories is Karasek’s Demand Control Support model which has been used in landmark studies such as the Whitehall study in the UK; this model was created to demonstrate the association of job demands with health and sickness absence (Stansfield et al., 1999). Job demands, job control and social support at work are related to aetiology of health complaints (Janssen et al., 2003). Karasek’s model hypothesizes the combination of high job demands, low control, and low social support from supervisor/coworkers predicts adverse health; and conversely, moderate to high job demands, moderate job control and strong social support predict high motivation (Janssen et al., 2003). Many have continued to explore the psychosocial aspects of work and resulting impact on health and disability, including return to work. For example, Johnston et al. (2007) looked at the relationship between psychosocial risk factors and neck symptoms and found that varying physical and psychosocial workplace or job demands may be a risk factor in some occupations and not others. These authors concluded that “psychosocial factors can increase risk for neck symptoms, independent of physical demands” (p.317).

Subsequent researchers have looked at demand / coping versus demand / control. The Demand Coping model postulated that all stressors are filtered by coping and defense mechanisms before accessing the individual’s response system. Coping was defined as “the expectancy of positive outcomes” (Eriksen & Ursen, 1999, p.248). Eriksen and Ursin (1999) found that subjective health complaints were more related to coping than control, concluding that individual coping mechanisms were more important than organizational factors. Coping was
examined as the mechanism by which an individual manages life stress, a subjective experience of expectancy tied to helplessness or hopelessness. These authors found that coping explained substantial variance, especially for pseudoneurological complaints - "(American Psychiatric Association, 1994)"... including... "(palpitation, heat flushes, sleep problems, tiredness, dizziness, anxiety and depression)” (Erikson et al., 1999, p. 242). Individual factors therefore mitigate the effects of workplace risk factors, demonstrating the multifaceted nature of this concern.

The association of job demands and sickness absence is complex (Stansfield et al., 1999). These theories have been used to explain the etiology of musculoskeletal conditions, hypothesizing that when psychosocial demands exceed individual coping capabilities a stress response, muscular tension and pain can result (Ariens, Bongers, Hoogendoorn, Houtman, van der Wal, & van Mechelen, 2001). This relationship is therefore confounded by many individual factors and individual coping abilities or mechanisms that are in place prior to joining an organization or assuming a specific position or job (Eriksen & Ursen, 1999).

**Musculoskeletal Conditions**

Musculoskeletal disorders are still the major reason for sick leave (Holmgren & Ivanoff, 2004), represent the large majority of work injuries (Breslin et al., 2008, Punnett, & Wegman, 2004) and are the most reported subjective health complaint (Eriksen et al., 2006). Musculoskeletal disorders represent 33% or more of all registered occupational diseases in the US, Nordic Countries and Japan combined and cause work absenteeism and disability (Punnett & Wegman, 2004).

Work disability is multi-causal and involves interactions of the worker, healthcare, environment and employer (Briand, Durand, St.-Arnaud, & Corbiere, 2007). While musculoskeletal conditions are frequently attributed to work demands, there is debate regarding
the work-relatedness of musculoskeletal disorders (Punnett & Wegman, 2004). The etiology of
physical conditions is multi-factorial and includes ergonomic, work environment, health
behavioural, demographic, psychosocial, physical demands and control (Elfering, Semmer,
Schade, & Grund, 2002; Punnett & Wegman, 2004; van den Heuvel et al., 2004).

Exploration of demographic variables related to work related injuries and lost time from
work support tangible causal relationships between work, specific populations and development
of musculoskeletal conditions. Breslin et al. (2007) looked at Statistics Canada data regarding
lost days for work related injuries of Canadians aged 16 to 24 years. These authors found that
younger workers, especially those with less than high school education were three times more
likely to have lost days. Most notably, 15 to 26% of these injured young people were found to go
on to have a permanent impairment. Others found significant relationships with demographic
variables when examining neck, shoulder, hand and arm musculoskeletal symptoms in computer
users; personal factors such as age, ethnicity and prior history were found to be more strongly
associated in females than males (Gerr, Marcus, Ensor, Kleinbaum, Cohen, Edwards, Gentry,
Ortiz, & Monteilh, 2002). In addition to demographics, job characteristics were found to be
prominent risk factors with increased work hours raising the risk. Breslin et al. (2008) furthered
these findings with evidence of a dose-response relationship between total hours worked per
month and work disability absence.

Beyond these associations, it is known that physical demands account for or explain only
a fraction of the development of musculoskeletal disorders. The etiology of back pain is multi-
factorial in nature, and includes job intensity and job satisfaction, with physical demands
predicting only 20% of back pain experienced (Johnson et al. 2003). Researchers have typically
examined claims for a single type of work related musculoskeletal condition and associated
factors to explain causality or identify contributing and associated risk factors. Many are now
focusing on psychosocial work factors and expanding the literature showing that psychological work conditions predict or are contributing factors in the occurrence of self-reported musculoskeletal disease (Ariens et al., 2001; Hoogendoorn et al., 2001; Leroux, Dionne, Bourbonnais, & Brisson, 2005; Melchior, Niedhammer, Berkman, & Goldberg, 2003).

Butler and Liao (2002) reviewed workers’ compensation claims filings of one company and job type and noted the importance of psychosocial factors in filing of occupational carpal tunnel syndrome (CTS) and sprain claims due to significant non-physical correlates; these authors commented that occupational CTS outcomes and recovery prognosis, even after treatment, were worse than for non-occupational occurrences. Leroux et al. (2004) reviewed the Quebec Health Survey data to examine the determinants of musculoskeletal pain and concluded that “physical and psychological work factors and psychological variables were associated with musculoskeletal pain” (Leroux et al., 2005, p.379). In looking at the factors predicting recurrent back pain and sickness absence, Van de Heuvel et al. (2004) found that pain, physical demands — including upper extremity rotation, as well as work place factors such as low decision authority, low job satisfaction and low co-worker support all increased risk. Social support including supervisor support was associated with neck symptoms (Johnston et al., 2007) and was a risk factor in musculoskeletal conditions (Hoogendoorn et al., 2001). Recovery has been shown to be impacted by similar factors. Mielenz et al. (2008) concluded that workers with less social support from coworkers were at 1.55 times greater risk of not attaining complete recovery from low back pain in 8 weeks (Mielenz, Garrett, & Carey, 2008).

Other studies have continued to demonstrate the relatively low contribution of workload (physical or psychological) to work absence. Moderate correlations were found among pain, general health and quality of life in individuals off work for two to six weeks due to musculoskeletal complaints (van Duijn, Lotters, & Burdorf, 2004). The contribution of an
individual’s perception has also been examined. “Perceived muscle tension was associated with an increased risk of developing neck pain among VDT users” (Wahlstrom et al., 2004, p.523), and was more highly associated with high job strain, as compared to high physical demands and high perceived muscular tension.

**Mental Health Diagnoses**

Despite the trend of greater representation of mental health diagnosis in sick leave claims, the small number of people suffering from major psychiatric illness has remained unchanged (Cohen & Kinnersley, 2005). In 2002, 4% of employed people 25 to 64 had an episode of depression with high odds of decreased work activity; an additional 8% of the employed population had experienced an episode in their lives to that date (Gilmour, & Patten, 2007). Williams and Schouten (2008) cited the incidence of a depressive episode at 13.23%.

Psychiatric disability (as defined by a DSM IV diagnosis) is a significant concern for employers due to impact on productivity as well as costs. Depressed workers have 1.5 to 3.2 times more sick days, accounting for 20 million lost work days (Raderstorf & Kurtz, 2006). Those who remain on the job lose an average of five hours per week (Williams & Schouten, 2008). Depression causes 86% of the lost productivity of these individuals in terms of presenteeism (Sanderson, Tilse, Nicholson, Oldenburg, & Graves, 2007), defined as “lost productivity from attending work when unwell” (Sanderson et al., 2007, p. 65). Financial costs attributed to lost productivity of employees with depression in 2003 was $44 billion each year, excluding labour costs (Williams & Schouten, 2008). In the US, this accounted for $83.1 billion per year in 2000 and in Canada productivity losses of $2.6 billion in 1998 (Gilmour, & Patten, 2007).

Depression is the psychiatric condition most examined in the literature of work disability and has been found to be a risk factor for occupational disability which often occurs secondary to
other conditions (Crisp, 2007) such as work stress. "Major depression is increasingly viewed as an abnormality of stress-adaptation systems in the brain" (Wang, 2005, p.869). In this view, it is felt that work stress overwhelms those predisposed to mental health issues leading to depression. "Recent stressful events have been found to be strong risk factors for major depression" (Wang, 2005, p.865). Job related factors that have been associated with depression include white collar, shift or stressful work. Depression is also a precursor to occupational disability given that depressed individuals are more likely to report work impairment or disability (Gilmour & Patten, 2007). The Canadian National Health Population Survey was used to demonstrate that individuals who reported a work stress score above the 75\textsuperscript{th} percentile were significantly more at risk of a major depressive episode (Wang, 2005). There was no effect modification for this group by psychosocial variables. This result is in direct contrast to self-reported common mental disorders which have been strongly associated with these variables.

Mental health in the workplace is related to individual and organizational factors. Mental health issues are one of the leading causes of work absenteeism per the WHO 2005 (Briand et al., 2007; Tennant, 2001). Not all mental health conditions are psychiatric in nature, most sickness absence is attributed to diagnoses classed under the category of common mental disorders or CMD rather than complex psychoses (Henderson et al., 2005), such as stress.

"Over the past decade, mental health issues in the workplace have emerged as the second leading cause of disability" (Raderstorf & Kurtz, 2006, p.55) second to musculoskeletal conditions. The types of mental health issues described would be classed as CMD. Thirty five to forty five percent of absenteeism from work, long term incapacity and retirement is reported as due to CMD (Cohen & Kinnersley. 2005; Van Oostrom et al., 2008). CMD is associated with economic inactivity and decreased physical and social function (Fone et al., 2007).
Most new illness claims are related to work strain and stress (Holmgren & Ivanoff, 2004). In the UK, these claims have doubled and now account for more claims than musculoskeletal conditions (Henderson et al., 2005). In the Netherlands, 9% of workers are entitled to disability benefits and one third of these are psychological claims with 90% diagnosed as SMD (Stress related Mental Disorders) (Bakker et al., 2006).

Theorists explain this phenomenon as a result of an imbalance between an individual’s personal resources and increasing work demands leading to distress and ill health, persistent conditions which can lead to a psychiatric disorder (Bakker, Terluin, Van Marvijk, Gundy, Smith, van Mechelen, & Stalman, 2006). Those with mental health issues experience and report high work stress (Wang, 2005). Conversely, some individuals are predisposed and vulnerable to psychological injury due to a lack of sense of personal identity (Fryers, 2006). “Distress reflects the effort people have to put into coping with stressors in order to maintain their habitual level of psychosocial functioning” (van Oostrom et al., 2008, p.3) and if there is a severe breakdown in coping mechanisms, this can lead to development of a CMD.

Reported work related stressors and CMDs are complex and involve individual context and work environment, and can effect work as well as home and family life (Holmgren & Ivanoff, 2004). A combination of “comorbid, sociodemographic and psychosocial factors provide a framework from which to identify those at greater risk of depression and occupational disability” (Crisp, 2008, p.267). Individual experience varies and researchers have studied the experience of those in high stress jobs such as nursing and emergency personnel to examine the effects. Van der Ploeg et al. (2003) looked at those with high stress jobs and concluded that ambulance personnel were at high risk of health symptoms due to stressors; however, this was most associated acutely and did not predict health symptoms long term (Van der Ploeg, & Kleber, 2003).
Sick leave is one exit avenue for individuals unable to cope with work demands (Engstrom & Janson, 2007). In the general population there is increasing social acceptance of anxiety and stress as legitimate reasons for absence and disability (Cohen & Kinnersley, 2005). As outlined, there are usually multiple issues involved and early and timely intervention is critical (Cohen & Kinnersley, 2005; Raderstorf & Kurtz, 2006). “Early return to work of employees with mental disorders is very important” (Van Oostrom et al., 2008, p.1). Cohen and Kinnersley (2005) indicate that 90-99% return to work quickly, however “the assumption that because an individual is depressed or anxious means they should take time off work may not be correct” (Cohen & Kinnersley, 2005, p.203).

Antecedents to Sick Leave / Work Disability

A significant portion of studies have examined the antecedents of work disability in an effort to identify causal factors. These studies have looked at specific workplaces and occupations, those reporting particular musculoskeletal conditions, and those receiving disability benefits or workers compensation claims as heterogeneous groups from which to examine the common factors associated with work absence or disability. In order to identify the determining factors in impairment and disability, these must be examined in the context of the workplace as well as individual factors (Williams & Schouten, 2008).

With an increased focus on non-physical antecedents to work absence or disability, additional factors related to individual work experience or perception and the association with reports of disability, injury or pain have been explored. Psychosocial factors have been linked to the development or reporting of injury, illness and disability. Psychosocial factors identified in the literature include social support, work characteristics, high job demands, low decision latitude, few rest breaks, lack of stimulating tasks, job strain, conflicting demands and individual perceptions (e.g., job satisfaction). These are commonly used as study variables along with
physical demands of the occupation and either self reports of disability or claims data. There are no objective measures of the psychosocial work environment (Melchior et al., 2003); however, research demonstrating strong correlation between objective and self-reported psychosocial factors was discussed by Eriksen, Bruusgaard and Knardan (2003).

A large body of evidence has demonstrated that psychosocial factors contribute to the reporting of musculoskeletal conditions (Ariens et al., 2001; Johnston et al., 2003; Johnston et al., 2007; Leroux et al., 2005; Mielenz et al., 2008; Wahlstrom, Hagberg, Toomingos & Tornqvist, 2004; van den Heuvel et al., 2004). These studies tend to examine one specific type of musculoskeletal condition and most concentrated on work-related conditions. For example, evidence of the contribution of psychosocial factors to reports of neck pain was demonstrated in Leroux et al (2005), Johnson et al. (2003) and Johnston et al. (2007). Further, Ariens et al. (2001) concluded that psychosocial factors in the workplace are independent risk factors for neck pain. Some authors expanded further commenting that the aetiology of neck pain is multifactoral (physical, psychosocial and individual) and concluded that physical exposures plus job strain lead to excess risk of reporting neck pain (Wahlstrom et al., 2003).

In investigating degree of impact, Johnson et al. (2003) indicated that physical demands accounted for a fraction of low back pain and concluded that the risk of back pain increased with adverse psychosocial factors including job dissatisfaction, noting other studies with similar findings. Others reported an association between work characteristics (such as social support) and the occurrence and reporting of disability from low back pain (Mielenz et al., 2008). Causal relationships have also been explored with authors concluding that "psychosocial work characteristics appear to predict both the occurrence and recurrence of low back pain" (van den Heuvel et al., 2004, p.465). These authors commented that their results indicated the relationship was strongest in recurrence.
Studies have also examined the development and reporting of psychiatric and common mental disorders. Whereas physical factors predict acute disability (under one month), psychosocial factors are most strongly associated with subacute (one to three months) and chronic disability (over 3 months; Franche & Krause, 2002). Higher psychosocial demands were associated with subjective health complaints and the need for recovery (Eriksen et al., 2006). When comparing psychosocial factors and social support effects on incidence of absence, Melchior et al. (2003) found psychosocial factors stronger predictors of sickness absence. Eriksen et al. (2006) found that higher job demands were not associated with severity of the condition, but were associated with sick leave, concluding that higher psychosocial demands explained variance in incidence and recovery.

Social support is an important component of work and contributes to individual experience and perceptions. Researchers have examined the effects of supervisor and co-worker support on reported work-related disability. Utilizing a computer aided telephone survey testing the buffering hypothesis of social support with work stress Ducharme and Martini (2000) found benefits from instrumental support, but no buffering of the adverse impact of unrewarding work on job satisfaction. Low social support from a supervisor and co-workers was also found to be a risk factor for low back pain (Hoogendorn et al., 2002). Social organizational characteristics of work lead to illness and injury. Elfering et al. (2003) looked at social support and the development of back pain and found positive effects (less back pain) from supervisor support and negative effects from the support of the individual's closest colleague. Conversely, Gilmour and Patten (2007) found that low co-worker support was a statistically significant predictor for depression. Johnson et al. (2007) indicated that low supervisor support was the only psychosocial risk factor identified for the presence of neck symptoms. Social relationships in the
work place are but one example of the complex interaction of workplace factors with individual factors.

**Workplace Factors**

Researchers have typically examined a group of ‘psychosocial variables’ to examine work-related antecedents to disability and work absence (van den Heuvel, 2004). It is important to isolate objective physical factors from psychosocial and social factors as well as from workplace factors. Workplace factors include occupation and job characteristics, and often also involve the perceptions of the individual. Different researchers have termed these variables working conditions, work characteristics, or workplace factors. An organization’s culture plays a significant role, shaping shared beliefs, climate, perceptions and guiding behaviour of performance and productivity, all of which form workplace constructs that should be examined (Krish, 2000).

Working conditions contribute to illness or influence individual perception of work ability and decision to be absent (Eriksen et al., 2003). Working conditions are linked to physical and mental symptoms as well as sickness absence (Holmgren & Ivanoff, 2004). The Whitehall study linked work characteristics with lower health status (Stansfield et al., 1999). van Duijn et al. (2004) found low correlations between work demands and several health outcomes. Workplace factors can be macro (disputes, negotiations, hiring freezes or downsizing) or local (individual e.g. job satisfaction); both effect absence (Eriksen et al., 2003.) Research has demonstrated that sickness increases with adverse conditions at work (Fryers, 2006) such that characteristics of the work environment and interactions can have a significant influence on an individual, independent of underlying medical condition and other illness factors (Frache & Krause, 2002). Workplace characteristics have an important role in aetiology of health complaints and sickness absence reporting (Jannsen et al., 2003).
The contribution of workplace factors to claim rates and outcomes has been documented. Salkever et al. (2001) examined occupational injury rates and costs and determined that workplace characteristics predict claim rates (Salkever, Shingole, & Purushothaman, 2001). Breslin (2008) commented that job characteristics and stress predicted work related absence. The importance of macro organizational factors on Long Term Disability (LTD) (sick leave program for absences typically over 26 weeks) incidence was demonstrated with municipal employees in Sweden, finding that workplace factors were related to work disability (Dellve et al., 2006). Organizational structure and culture also has an effect on the outcome of sickness absence with employees of not-for-profit organizations being twice as likely not to return to work compared to other workers (Schroer et al., 2005).

Individual perceptions of the workplace are a significant factor in the relationship between workplace factors and disability. The importance of perception of workplace factors was demonstrated in Eriksen et al.'s (2003) study looking at Nurse’s Aides; these authors found that the strongest predictor of disability was organizational support within the workplace culture. While associations between workplace factors and all types of disability and absence have been reported, those for psychiatric conditions and absence appear most poignant. Raderstorf and Kurtz (2006) discussed factors affecting psychological leaves and the multiple issues usually involved, commenting on the perceptions of employees in terms of support, communication and job dissatisfaction. Kirsch (2000) looked at mental health consumers particularly and noted the importance of organizational culture and person-environment fit as well as the need for congruence with value systems for optimal work integration.

Duration of work disability absence is also related to workplace factors, but duration alone does not reflect the entire picture; “Longer work absence may also reflect other (non-injury) sources of conflict between supervisors and employees, including job performance or
organizational issues” (Shaw, Robertson, Pransky, & McLellan, 2003, p. 130). Individual work experience includes not only the workplace, but also factors termed work related factors.

In this complex relationship, work related factors are being recognized as a significant contributor to reporting of disability. Salkever, Shinogle and Purushothaman (2001) examined Long Term Disability claims data and found that only 25% of injuries were truly work related and concluded that employer characteristics were a better predictor of claims rates. Salkever and colleagues concluded that work related factors such as employer characteristics (layoff, industry and practices) were significant predictors of injury claim rates. In a prospective cohort study of prognostic factors in recurrent absence of low back pain and absence, van den Heuvel et al. (2004) concluded that “work related factors predict a poor prognosis of low back pain” (p. 459). In their study, low decision authority and low job satisfaction increased the risk of recurrent low back pain, and low co-worker support combined with low job satisfaction were predictors of sickness absence due to back pain.

The proportion of sick leave caused by subjective health complaints has risen significantly (Eriksen et al., 2006). Submission of disability cases after performance reviews is common place and poses many challenges (Raderstorf & Kurtz, 2006). Demographics, job performance warnings, workers’ compensation benefits, or a disciplinary notice increased employee propensity to file a carpal tunnel syndrome claim (Butler & Liao, 2002).

**Workplace Stress**

Stress is a commonly reported condition employees relate to the workplace and international data indicates that occupational stress represents an increased proportion of sick leave claims. In addition, an increasing proportion of psychiatric disability claims have a workplace stress component (Raderstorf & Kurtz, 2006). Sources of stress are structured into the
workplace environment (Ducharme & Martin, 2000). For example, job demands and pressures are related to outcomes including psychological distress and depression.

The subjectively reported impact of work stress on an individual, as well as relationship with disability has been documented. Those with higher reported work related stress report less job satisfaction, productivity, mental / physical health and have higher absenteeism (van der Ploeg, & Kleber, 2003; Tennant, 2001). Using the Canadian National Health Survey data, Wang (2005) concluded that work stress increases the risk of physical illness and depression. Independent stressors included low skill discretion, high psychological demand, high job insecurity and low work place supports. Those who are predisposed or have personal risk factors for sickness absence or poor health history may be more affected by work stress. Workers with health problems perceive work as strenuous and problematic (Eriksen et al., 2003) and those who perceive high psychological demands have a high prevalence of subjective health complaints, absenteeism and sickness certification (Eriksen et al., 1999).

Workplace factors are most predictive of sickness claims and absence for those with high stress jobs. Work disability was preceded in RNs by work instability, defined as a mismatch between employee capabilities and job demands (Gilworth, Bhakta, Eyres, Carey, Chamberlain, & Tennant, 2007). In emergency personnel, Van der Ploeg et al. (2003) found that almost all health symptoms were related to social aspects of work, communication and supervisor support. This relationship is important to understand when looking at outcomes of disability and return to work.

Return to Work

Return to work research elucidates further on these issues, in that factors causing or contributing to work absence or disability also act as barriers when returning an individual to work. Return to work should be viewed as part of the recovery process (Dellve, Karlberg,
Allebeck, Herloff, & Hagberg, 2006). When an individual has been on sick leave for a period of time, return to work is prevented due to the normalization of that mode (Thulesius & Grahn, 2007).

Many researchers have verified that the factors affecting return to work are similar to those most associated with the reporting of illness or disability, including individual (perceptions, coping, health status), physical capabilities, psychosocial, economic, job demands, insurance involvement and type of employment (Franchise & Krause, 2002; Hall, 2007). Medical factors such as previous long term sickness, elapsed time of absence, high pain and severity of the condition have been shown to negatively affect return to work (Engstrom & Janson, 2007; Joling, Groot, & Janssen, 2006; Haahr et al., 2007). Individual factors such as demographics and socioeconomic status have also been shown to impact return to work and work status differently for men and women. (Haahr et al., 2007; Joling et al., 2006). Further, work related factors such as employment sector, hours of work, size of company, physical work demands, and available modified duties can all affect return to work (Shaw et al., 2003; Post, Krol, & Groothoff, 2005).

Not unexpectedly, a large body of research has examined the role of workplace factors in return to work and in particular, for individuals diagnosed with psychiatric and common mental disorders. "There is an impressive body of evidence supporting workplace, psychosocial and psychological factors as crucial... in return to work" (Franchise & Krause, 2002, p.236). "Not uncommonly... an individual has recovered sufficiently to consider a return to work but perceives that exposure to his employer, colleagues or other aspects of work will lead to a relapse (Henderson et al., 2005, p.803). Barriers to return to work include an unchanged work situation, no sympathy, lack of social support at work and uncertain capabilities. "Work related factors... causing physical and mental symptoms with sickness absence as a result also contributed obstacles for ...return to work" (Holmgren et al., 2003, p.220). Employers need tools
to "distinguish between true disability and other extraneous factors" (Raderstorf & Kurtz, 2006, p. 54).

Social support at work has been identified as an important factor in individual job satisfaction, reporting of a work related injury, or claiming for disability benefits. The most important factor in return to work appears to be supervisory support (Post et al., 2005). Shaw et al. (2003) utilized an expert panel working group approach, who indicated that employees most value support of their supervisor for post injury recovery and return to work, concluding that "interpersonal aspects of supervision may be as important as physical work accommodation to facilitate return to work after injury" (p.129). Return to work is dependent on workplace issues including management support. Janssen et al. (2003) commented that high support by supervisors was most predictive of return to full duties.

Understanding the importance of and role a supervisor can play in return to work provides a "unique opportunity for sick listed employees and supervisor to discuss barriers to return to work" (Van Oostrom et al., 2007, p.1). Early intervention and addressing barriers is important as the elapsed time of absence determines chances of return to work (Joling et al., 2006; Engstrom & Janson, 2007). Strategies are required which utilize this knowledge to promote optimal outcomes for employers and employees.

Prevention / Strategies

Research demonstrates that early intervention is imperative for return to work. This is true for treatment of the medical condition as well as addressing other factors involved in a specific individual’s circumstance. Conditions may be treated effectively if diagnosed early (Bakker et al., 2006; Sanderson et al., 2007). There is a "window of opportunity for effective clinical and occupational management (1-6 months)" (Cohen & Kinnersley, 2005, p. 201). As noted, there are usually multiple issues and early intervention to address these factors is critical.
(Raderstorf & Kurtz, 2006). After the first four months of sick leave, the chances of return to work diminish (Janssen et al., 2003). After one year, the chance of an individual ever returning to work is low (Engstrom & Janssen, 2007). Illness, disability and incapacity are linked, 40% of those off work for 12 weeks are still off at one year (Cohen & Kinnersley, 2005). Problems need to be identified early so that appropriate interventions may be targeted (Gilworth et al., 2007).

Work is part of the recovery process (Bakker et al., 2006). Employers can learn from research and target workplace factors for prevention efforts (Johnston et al., 2003). Thulesius and Grahn (2007) looked at understanding and addressing work absence through identification of reasons behind behaviour (i.e., changed capacities or loss of incentive). These authors commented that repair strategies include reincentivizing, as well as body and workplace repair. A better person-environment fit increases satisfaction, commitment and performance (Johnston et al., 2003). Interventions can be instituted within the disability period, especially when workplace or work related factors are significant.

Having a medical diagnosis does not automatically constitute a disability or impairment (Williams & Schouten, 2008) and few people with disabilities are unable to work in any way (Fryers, 2006). There are opportunities and ways of supporting those with treatable conditions to continue to participate in work (Waghorn, Chant, White, & Whiteford, 2005). Interventions need to be based on employee’s roles and promote productivity (Hall, 2007).

As outlined, work and organizational factors influence the frequency and duration of work disability. An employer’s response and active participation is important. The characteristics of the work environment have a significant influence independent of any underlying medical condition (Franche & Krause, 2002). Proactive workplace Disability Management programs are needed to lower disability rates (Shaw et al., 2003) and strategies are critical for return to work outcomes. This requires a non-confrontational, people oriented workplace culture with
supportive supervisors (Franche & Krause, 2002). Research has clearly demonstrated that intervention in the workplace decreases sick leave (van Oostrom et al., 2008).

Research findings with respect to those at risk can be used to target prevention efforts. Ill health can be prevented by employers addressing risk factors for lower occupational groups that are more prone to the documented adverse affects of job control and support (Melchior et al., 2003). Work instability or mismatch between individual capacity and workplace demands impacts efficiency and productivity at work (Gilworth et al., 2007). Ultimately, this can start as early as during the hiring process, ensuring a good fit with the workplace culture. Employers need to be aware of these factors for effective recruitment and retention of staff (Gilworth et al., 2007; Haahr et al., 2007).

Many companies have not developed strategies to measure, manage or mitigate this problem, with implications for work outcomes, labour force status, economic outcomes, health status, role function and worker measures (Hall, 2007). Work related issues have become a significant predictor of sick leave, as well as illness and disability claims; however, employers are uncertain about how to proceed or what may be done. Research has shown that often “medical leave can be prevented by addressing performance issues...avoid the bossectomy” (Raderstorf & Kurtz, 2006, p.57, 58). Should a disability be reported or absence occur, the demonstrated benefit of supervisor support can be used to prevent workplace disability; this can occur through employer communication and accommodation, continuing through to return to work in a collaborative way (Shaw et al., 2003).

Healthy workplaces are prepared and have strategies to meet the needs of individuals and the company, promoting a positive environment (Kirsch, 2000). With liability factors, psychiatric morbidity is a major issue and requires major changes in employment structure (Tennant, 2001). “Strategies to improve the work environment are needed to keep workers
mentally healthy and productive” (Wang, 2005, p.865). Overall, more interventions in the workplace for individuals are needed. There is huge preventative potential in examining macro-organizational factors including availability of modified work (Wahlstrom et al., 2004; Dellve et al., 2006). Having a structure that promotes health, providing supports for those in susceptible groups, and being able to respond to individual situations with good strategies is essential.

Employers need to understand the value to developing infrastructure to address disability and absence. There is a common assumption that outcomes are predictable (Pransky et al., 2004). Communication, decreased adversarial relations, and new interventions are needed to improve outcomes and achieve success. Most programs look to the employee’s physician for information; however, this approach leads to ignoring key workplace and psychosocial variables which are important and associated with disability outcomes (Pransky et al., 2004). Employers need to look inward and to have good information on which to build the business case to maximize the satisfaction and health of their workplace.

**Research Question and Hypotheses**

Disability rates are trending higher over time and there is no indication of this decreasing. In the field of Disability Management, additional clarity around causality and antecedent factors contributing to work absence and disability would be extremely valuable to practitioners and employers. Strategies could be proposed to assist employers to proactively mitigate precursors to absence and disability. To provide insight into this issue it is important to provide quantitative information regarding the impact and frequency of work related factors in Short Term Disability.

A comprehensive literature review regarding this topic has revealed limitations in the body of research regarding the antecedents to disability. Most of the research has examined one single condition, or focused solely on work disability absence. Subjective reporting and surveys from self reports of musculoskeletal, psychological symptoms, stress and job demands are
primarily used to identify those at risk for disability. In most studies, no categorical diagnostic criteria (such as the DSM IV) were used to classify conditions. Factors reviewed with respect to causality, association and prediction of disability are not consistently classed; therefore, results are mixed, limiting comparability of study results. Work related, psychosocial, workplace and individual factors are often all classed under the title of psychosocial or work-related factors.

A need for clear definitions and distinction between these terms was identified in order to expand upon the current research. In addition, the use of standard classification for diagnosis categories (ICD 10), categorical diagnostic criteria for diagnosis confirmation used in the Disability Management field (DSM IV and Disability Duration Guidelines), was felt to further elucidate categories of conditions most commonly associated with absences where-in the medical condition is not the presenting or primary factor and work related issues are present.

Data from workplaces in the form of sick leave claim data was available and utilized by this researcher; to my knowledge, such information has not been previously utilized in a similar study. Specifically, data from self-insured employers for their Short Term Disability programs who utilize a third party administrator for adjudication and case management had not been examined in this manner to date.

**Hypotheses**

The purpose of this study was to use actual data from the Short Term Disability experience of employers, to examine the relationships between types of disability, work related factors, gender and length of absence. The aim was to provide new data demonstrating the need for direct efforts toward mitigating the effects of workplace factors on individual health and disability. Primary data points and variables examined in this research study included gender, work related factors (Yes, No and per classifications defined below), International Classification of Disease (ICD 10) diagnosis classification, and length of disability as measured by Total Days Off (TDO) as the dependent variable.
This author hypothesized firstly that the data would demonstrate gender differences, such that Females would have longer average durations of absence (Total Days Off- TDO) than Males as suggested by the literature. Secondly, that TDO would vary as a function of work related variables, with longer mean TDO in cases where work related variables were present. Thirdly, it was hypothesized that TDO would vary as a function of injury / illness classification. Finally, it was hypothesized that there would be a significant specific interaction of work related variables accounting for higher mean TDO.

Method

Definitions

Work related factors. For the purpose of this study, work-related factors were classified into three classes. The first, job related, included factors inherent to the workplace such as industry, occupation, job characteristics, culture, demands, lay-offs, production requirements and downsizing. The second class was labelled social, and represented factors that involved the personal experience of work such as supervisor support, co-worker interaction, intrinsic and extrinsic rewards. The third and final class was performance and included factors related to the performance of the individual in the workplace, or the completion of recent performance reviews and feedback.

International Classification of Disease. (ICD 10) The ICD 10 classifications were used for the injury / illness classification in this research. “The ICD is the international standard diagnostic classification for all general epidemiological, many health management purposes and clinical use” http://www.who.int/classifications/icd/en/. For the purposes of this research, the high level classifications were used and grouped into three categories. Specifically, these categories were Mental Health (mental and behavioural disorders), Physical Conditions (diseases of the musculoskeletal system and connective tissue) and Disease Related. The Disease Related
category represented all of the other ICD 10 classifications including certain infectious and parasitic diseases, neoplasms, diseases of the blood, endocrine, nutritional and metabolic diseases, diseases of the nervous system, diseases of the eye and adnexa, diseases of the ear and mastoid process, disease of the circulatory system, diseases of the respiratory system, diseases of the digestive system, diseases of the skin and subcutaneous tissue, diseases of the genitourinary system, pregnancy, childbirth and the puerperium, certain conditions originating in the perinatal period, congenital malformation, deformations and chromosomal abnormalities, symptoms, signs and abnormal clinical and laboratory findings not elsewhere classified, injury, poisoning and certain other consequences of external causes, external causes of morbidity and mortality, factors influencing health status and contact with health services, and code for special purposes.

Sample

The sample was drawn from the data of three companies who have a 26 week self-insured Short Term Disability program administered by a Third Party disability management company for the calendar years of 2008, 2009 and 2010 (N=708). The three corporations all operate nationally across Canada and while in different businesses, their employee populations are comparable in size as is the nature of the work (white collar). Table 1 depicts the Frequency description of the sample utilized in this study. Thirty-four percent of the sample were Male (N=241) and 66% were Female (N=467).

Procedure

Data regarding Short Term Disability claims initiated within the 2008, 2009 and 2010 calendar year for the three companies was extracted in aggregate form from a proprietary Access and SQL based database of a third party disability management company. Extraction of the variables for each claim was achieved per company by selection of each company's claim data for all claims referred in 2008, 2009 and 2010, and selection of specific fields of information for
each claim particular to the variables of interest for this study. We note that no claims were excluded from the sample (including declined claims) and therefore the duration averages should not be interpreted as representative outcome data from the third party administrator. The data from all three companies were merged in an Excel spreadsheet. The 98 claims that had identified work related issues were further reviewed and coded by the author into one of the three classifications. This was completed through a review of the case manager’s identification of the specific work related issue. The TPA case managers are trained and skilled in identifying any presenting work related issues in a specific claim and detailing in the claim data. The coding was conducted by the author to maintain confidentiality of the individual records required by the TPA. The resulting completed Excel spreadsheet was uploaded to SPSS. Due to the large number of different ICD 10 categories, these were grouped into three classifications for analysis - Mental Health, Disease Related and Physical Conditions. It was noted that the classification of the identified Work Related Issues into the three classifications was completed by the author. This was performed for the 98 cases which were identified in the data to have work related issues as a component of their claim. Case managers at the TPA are required not only to enter when work related issues are a factor (a checkbox), but to identify the primary issue in a text field. Therefore, the author was able to review a single point of data and categorize as either job related, social or performance. As the classification was performed by the author alone, this may cause concern due to the lack of inter-rater reliability. Statistical guidelines indicate that a pre-study should be conducted to evaluate the inter-rater reliability or consistency of the measure, rating, or classification; that is, how consistent the ratings would be between two raters (Kimberlin & Winterstein, 2008). In a pre-study, if two raters were used, inter-rater reliability could be calculated by the percent agreement of the ratings between two raters or by use of Cohen’s kappa co-efficient of agreement, which corrects for chance agreement (Neuendorf.
Training raters how to interpret the criteria and consistently apply the rating scale is felt to impose some objectivity and consistency to the process (Neuendorf, 2002). Two raters are considered more reliable than one in rating factors, and fixed judges are still more reliable than random judges. In this specific example, a second rater was not possible due to the confidential nature of the information and handling required by the TPA. In this case, there was a fixed rater and consistent training was provided to both the author and the case managers who inputted the data regarding the claims into the database. This would lend some objectivity and consistency to the classification rating. This issue is also noted as a limitation of this study.

Results

Data Treatment

Assessment of assumptions. Data was verified and assumptions related to the data and analysis were reviewed. In terms of the dependent variable (TDO) the distribution was reviewed for normality, independence, and homogeneity of variance. A histogram was run on the dependent variable- Total Days Off (TDO) (Figure 1), which demonstrated a positive skew to lower durations. Most individuals on Short Term Disability were not off very long. Normalization of the data was not completed given that a positively skewed relationship was expected and demonstrated the desired outcome for this data and these programs.

ANOVA. ANOVA is a statistical procedure, and the acronym stands for Analysis of Variance (Abu-Bader, 2010). ANOVA is a powerful and common statistical procedure used in the social sciences. In general, the purpose of analysis of variance (ANOVA) is to test for significant differences between two or more means, of groups or variables for statistical significance among them (Tabachnik & Fidell, 2007). This is accomplished by analyzing the variance, via a formula that partitions the total variance into the component that is due to true random error and the
components that are due to differences between means (Ferguson, 1966; Weiss, 2012). The variance components that are due to differences between means are then tested for statistical significance, and, if significant, allow rejection of the null hypothesis of no differences between means and acceptance of the alternative hypothesis that the group means are different from each other (Ferguson, 1966; Tabachnik & Fidell, 2007).

ANOVA was used in this study as the primary interest was to review group differences in duration related to group composition per the dependent variable. The large sample size provided more power for the statistical analysis (Weiss, 2006). ANOVA is able to deal with the skewed normality of the data (Weiss & Hassett, 1982). The data was not normalized as it is consistent with the actual data patterns seen in STD claims data. It was believed that combined with the post hoc tests clear results for the differences between the groups would be seen. The likelihood of Type 1 error rises with the number of analyses (Weiss, 2006). Due to the low number of ANOVAs completed (four), the likelihood of Type 1 error was low, and therefore the LSD post hoc and significance level of p<0.05 was considered conservative enough in discussion with this author’s supervisor.

There are three main assumptions that need to be in place for ANOVA. The dependent variable should be normally distributed in each group that is being compared in the one-way ANOVA. There should be homogeneity of variances wherein the population variances in each group are equal. (Ferguson, 1966) ANOVA tolerates violations to its normality and homogeneity assumptions (Ferguson, 1966; Weiss & Hassett, 1982) rather well and the one-way ANOVA can tolerate data that is non-normal (skewed or kurtotic distributions) with only a small effect on the type I error rate. The third assumption is independence (Weiss & Hassett, 1982; Weiss, 2012); in this example, this assumption is that the sample does not contain multiple data points for a given individual. In situations where the same individual was represented more than once within the
data set, the assumption of independence would be violated because the individual would remain the same on a variety of variables unrelated to the disability claim (e.g., gender, age, etc.) and this would reduce the amount of variability available to analyze, that is, it would affect the calculation of the F statistic in ANOVA (Weiss, 1982). Within the study sample there was a noted limitation in the area of independence. Detailed review of the data was conducted and non-independence was a factor in three cases. Therefore, upon review with the supervising professor of this work, it was determined that the effect on the results would be minimal as there were 702 other claims in the sample that were independent of each other. This was listed as a limitation of this study.

**Analyses**

Frequencies were run on each variable per Table 1. The distribution of Injury category was 30% Physical Conditions (N=217), 14.5% Mental Health (N=103) and 54.8% Disease Related (N=388). The frequency of work related issues was 13.8% Yes (N=98), and 86.2% No (N=610). Frequency table for work related issues by classification showed that for the 13.8% where work related issues were identified 9.5% were Job related (N=67), 2.3% were Social (N=16) and 2.1% were Performance related (N=15).

Four one-way ANOVAs were conducted in SPSS to compare the means of the groups utilizing the dependent factor of Total Days Off (TDO). TDO is calculated from the date that an employee is absent from work until the date they return to work or transition to alternate benefits such as Long Term Disability (LTD) or maternity leave. The maximum TDO in this sample was 182 days which represents the claims that transitioned to LTD. TDO represents the duration of a claim and was chosen specifically to be examined as a representation of claim outcome. Longer durations mean more cost to the corporation and greater potential of poor outcomes for individuals. While incidence of claims or reporting of conditions has primarily been examined in
the research (Ariens et al., 2001; Butler & Liao, 2002; Hoogendoorn et al., 2001, Leroux, et al., 2005; Melchior et al., 2003; van den Heuvel et al. 2004), duration captures more information than simply whether someone was off over 5 days and reported a claim. Duration allows comparison of the absence outcomes and differences between groups classified by factors of interest. Groups were distinguished from each other by variables including gender, presence of work related factors (yes, no), classification of work related factor as well as injury illness category and means for each group were analyzed by ANOVA.

First, a one-way ANOVA was completed using the TDO as the dependent variable examining the effects of Gender (Male / Female) on the duration of absence (Table 2). The mean duration for Males was 45.35 days (SD=50.706) and for Females was 47.02 days (SD=42.96). There was no statistically significant difference between groups as determined by one-way ANOVA \( F(1,706) = .210, p = .647 \). The mean duration of absence (TDO) was not significantly different for males and females.

A second one-way ANOVA was conducted to examine the relationship between the dependent variable of TDO and the sample grouped by the presence of work related factors (Yes / No). The mean duration for the groups with work related factors was 77.7 days (SD=58.513) and those with no work related factor was 41.42 days (SD=41.203). As shown in Table 2, there was a statistically significant difference between groups as determined by one-way ANOVA \( F(1,706) = 57.67, p = .000 \). The group with work related factors had a mean TDO that was higher than the group with no work related factors. On average, when work related factors are present the duration was longer.

The third one-way ANOVA was conducted to examine the relationship between classes of Work Related Issues on mean TDO (dependent variable). Between the three classes of Work Related issues, the Social issues group was shown to have the highest TDO mean of 83.88 days.
and all groups with identified work related factors had means much higher than the group with no work related issues (Job Related- 76.82 days (SD=58.042) and Performance- 75.47 days (SD=62.539) versus 41.42 days (SD=41.203) with no work related issues. As shown in Table 2, there was a significant finding of difference in TDO between the presence of work related issues and none ($F(3,704) = 19.298, p = .000$). The multiple comparisons demonstrated that the TDO means for all work related factor classifications showed a statistically significant difference to that of the group with no work related issues ($p=.000$, $.000$ and $.003$); however, the three factor groups are not significantly different from each other. Per averages, durations of absence were longer when any work related issue was a factor.

The final one-way ANOVA examined the relationship between the dependent variable of TDO and the injury/illness classification. The mean TDO for the Mental Health classification was 66.20 days (SD=51.211) versus 40.03 days (SD=38.839) for Physical and 44.80 days (SD=46.423) for Disease, respectively. As shown in Table 2, there was a statistically significant difference between the effects of the type of injury/illness on TDO ($F(2,705) = 12.398, p = .000$). The multiple comparisons demonstrated that the TDO means for Mental Health were significantly different than that of the groups with Physical Conditions or Disease Related injury/illness classifications ($p=.000$, and $.000$). Differences between Mental Health and both Disease Related and Physical Conditions Classifications were demonstrated ($p=.000$). On average, durations were longer for those with Mental Health diagnoses.

**Discussion**

Research has demonstrated that work related factors influence disability, reporting and outcomes including return to work. Duration of absence may be the best reflection of the interplay of individual experience and all mitigating factors in a disability absence that cannot be explained by the course of a disease or disabling condition. Duration is important as longer absences have been associated with poor long term outcomes and lower probability of an
individual ever returning to their full regular work (Henderson et al., 2005; Haahr, Frost & Anderson, 2005; Van Oostrom et al., 2008) as well as adverse outcomes to an individual. Information which expands knowledge regarding antecedents and contributing factors to sick leave and provides insight into factors that prolong a sick leave is beneficial to the field of disability management.

This research sought to avoid pitfalls of previous research that looked at single conditions, occupational claims and subjective reporting of symptoms. Through the use of actual Short Term Disability claim data, this study examined the relationship between types of disability, work related factors and gender with length of absence. In classifying different types of work related factors into job related, social and performance, the separate relationship and contribution to durations could be examined. Classification of type of disability by ICD 10 coding provided a consistent and objective classification. This type of review with actual non-occupational claims data from a third party administrator has not been seen in the literature to date.

The research hypotheses were that gender differences would be observed and females would have longer average absence durations (TDO) than males, that those claims with work related issues would have longer average TDO, that specific injury/illness types would have longer average TDO and specific trends would be observed in work related factor classifications in terms of mean durations.

**Gender Differences**

The first hypothesis was that gender differences would be found in longer average durations for females versus males in the study sample. Results demonstrated no statistically significant difference between average duration (TDO) between males and females in the sample. It is concluded that the durations of short term disability claims are within the same
ranges for males and females. This finding somewhat contradicts earlier findings as discussed below.

Earlier works have concluded that females have a higher incidence rate of disability, twice that of males and account for four times the permanent disability pensions in Sweden (Dellve et al., 2006; Engstrom & Janson, 2007; Holmgren & Ivanoff, 2004); further, individual factors impact return to work and work status differently for males and females (Haahr et al., 2007; Joling et al., 2006). Interestingly, the sample did consist of more females (66%) which was over-represented per the Canadian population where females represent 50.4% of the total (from Canadian census). Research has demonstrated increased risks for females in development of certain types of disabilities from their male counterparts including being at an increased risk of depression (Crisp, 2007), and accounting for more reporting of common mental disorders (Fone et al., 2007; Fryers, 2006). This finding has been explained by women having lower perceived health status (Holmgren & Ivanoff, 2004). In the absence of demographic information of the workforce composition of the corporations utilized in this study, it is unknown if the incidence in the sample is an over-representation of females.

**Work Related Variables**

With respect to work related variables, it was hypothesized that the average length of absence (TDO) would vary as a function of job-related, social and performance issues in the workplace. Two analyses were conducted to examine the relationship of work related variables and duration in the sample. When looking simply at data of whether a work related factor was present or not, duration averages were higher for the ‘yes’ group at a statistically significant level. Durations were 1.87 times longer for the ‘yes’ group. In general, any presence of work related issues is related to longer STD absences. To further these findings and determine if specific work related issue classifications were related, an analysis was completed looking at the
work related group sorted by classifications (job related, social issues and performance). All
groups with work related issues had mean durations that were statistically significantly greater
than the claims with no identified work related issues, with the effect greatest for the social
issues classification. When social issues were present in a claim, average durations were 2.03
times longer than claims with no work related issues. Respectively, job related and performance
represented 1.85 and 1.82 times longer durations than claims with no identified work related
issues. This finding supports previous findings regarding the effect of work related issues on
disability outcomes.

**Social issues.** Claims with social issues represent only 2.3% of all claims in the sample;
however, these claims had the longest average durations (83.88 days). It has been shown that for
physical disabilities, psychosocial factors increase musculoskeletal symptoms (Ariens et al.,
2001; Eriksen et al, 2006; Hoogendoorn et al., 2001; Johnston et al., 2007; Leroux et al., 2005)
and are linked to the development and reporting of illness and disability (Melchior et al., 2003),
and recovery of an individual is affected by social support (Mielenz et al., 2008; van den Heuvel
et al., 2004), as are return to work outcomes (Franche & Krause, 2002; Post et al., 2004). Social
support in the workplace is an important component in overall job satisfaction for an individual
(Ducharme & Martin, 2000) and supervisory support is a primary factor in this relationship (Post
et al., 2005). These results demonstrate how important social factors may be to occupational
health and that such factors need to be assessed and addressed in disability claims.

**Job related / Performance.** Other factors have not been well separated or classified in
the literature. In this study, job related and performance factors were found to be similar in terms
of average durations, and although not as markedly different as the social issues, they remained
significantly above durations as compared to the no work related issues group. Changes in the
work environment including increased job demands, downsizing and increased job insecurity
have been shown to increase claims for sick leave (Engstrom & Janson, 2007; Haahr, Frost & Andersen, 2007; Salkever, 2000), and lead to long term work disability (Briand et al., 2007). Further, working conditions, work characteristics, job demands, work stress and job characteristics have all been shown to contribute to the incidence of sick leave. Briand et al. (2008) looked at the relationship between LTD and the work environment and found that 90% of the variability in those off work due to mental health problems could be accounted for by the work environment. Additionally, the work environment has been linked to reporting of musculoskeletal conditions (Johnston et al., 2003). Work related factors related to the work environment also contribute to duration of absence and disciplinary notices produced an increase in reporting of CTS claims (Butler & Liao, 2002). Low job satisfaction measures are consistently associated with development of conditions (Ducharme & Moulton, 2000). As stated by Holmgren et al. (2008) part of the relationship may stem from the barrier to return to work that is inherent in these factors. Without assistance, return to work will be delayed and disability durations prolonged.

**Injury / Illness Classification.** With respect to injury/illness classification, the present study looked at the relationship between duration of absence and injury/illness classification. The significant finding of higher average durations for those with diagnoses classified as Mental Health, as compared to both Physical Conditions and Disease Related classification, stresses the importance of this variable. This finding is consistent with the literature which documented increased absenteeism and lost productivity for those with mental health disorders such as depression (Raderstorf & Kurtz, 2006; Sanderson et al., 2007).

**Mental health.** Mental Health classified claims have increased (Cohen & Kinnersley, 2005; Henderson, 2005) and have become the second leading cause of disability (Fone et al., 2007; Raderstorf & Kurtz, 2006) representing 40% of wage loss insurance costs (Briand et al.,
In this study sample, Mental Health claims represented 14.5% of all claims, second to Physical or Musculoskeletal claims. Mental Health issues have consistently been seen to be a risk factor for disability in the literature and individuals with Mental Health diagnoses are more likely to report disability (Gilmour & Patten, 2007). The interplay of factors in the workplace including ‘stress’, is more significant for this group, as those with work stress are at 75% more risk to have a depressive episode (Tennant, 2001; Wang, 2005). The relationship of a Mental Health diagnosis with the duration of absence has been confirmed; however, the directionality of the relationship remains a question. It is likely that it is a combination in most cases; individual predisposition, coping capabilities, and diagnosis all contribute and may be enhanced by the influence of work related factors. The longer average durations confirm the importance of timely intervention and return to work (Van oostrom et al., 2008).

**Physical conditions.** Thirty percent of the claims in the study sample were diagnosed with Physical or Musculoskeletal injury/illness classification and this was the highest represented group, confirming observed trends and earlier findings. Physical injury/illness classification remains the major reason for sick leave (Holmgren & Ivanoff, 2004). Literature has shown that the physical demands of a position account for and explain only a fraction of development of disorders (Johnson et al., 2003) such that the impact of work related factors likely explains the variance and extended absences beyond anticipated medical recovery.

**Barriers / Limitations**

Short Term Disability claims data does not capture all absence from an employer, as thresholds are set for entry into the program at 5, 7 or 10 days of absence. Casual or shorter term absence is therefore not captured in this data. In addition, the reliance on Short Term Disability data ignores the other avenue for an individual to leave the workplace by filing a work related injury claim. As discussed, as a single rater classified the work related issues, a concern due to
the lack of inter-rater reliability could be raised. Due to the combination of the data from several corporations, we were able to review a good size sample; however, it was not possible to overlay population demographics to review whether trends were over-represented for one gender. A limitation in the assumptions of independence for the sample is present due to the possibility of the same employee having more than one claim in the three year period. Finally, the nature of the retrospective data did not allow for development of a cohort or control group.

**Implications / Importance of Study**

Duration of absence was examined in this study as the primary factor of interest, as prolonged absences are associated with poorer outcomes and understanding the contributing factors was considered the first step to addressing this concern. Lower duration of disability absence benefits individuals, co-workers and corporations. Individual health deteriorates when off work, and the absence places additional demands on co-workers. The impact of work related issues and the confirmation that these variable contributed to differences in longer durations, demonstrates the importance of addressing these issues, preferably before a disability results. There is a window of opportunity to identify and address these issues before they become disabilities. If a disability does occur, employers and disability management professionals need to be active participants, not rely exclusively on medical information, and identify the specific individual circumstances and issues such that time intervention can promote optimal outcomes. Effective mitigation of issues needs a proactive approach with communication, accommodation and collaboration (Shaw, 2003). This research has indicated that durations are particularly prolonged when work related issues are present and for Mental Health diagnoses. Employers need to address any work related issues proactively and openly and ensure that the work environment is not contributing to, or prolonging disability. Work related fit when entering the
corporation is important and pre-employment education regarding workplace culture may assist in averting issues due to mismatches of individual capacities and the workplace.

Traditional medical management approach which allows the individual to avoid the workplace and rest at home is ineffectual and lengthening durations can become "a causal factor in the deterioration of their mental health" (Cohen & Kinnersley, 2005, p. 203). Disability management professionals need to pay particular attention to claims where these factors exist and assist employers in developing tools to distinguish between true medical disability and other factors.

**Future Research**

This research has provided a baseline and direction for further research utilizing Short Term Disability claims data, examining durations rather than incidence of claims. Additional data from corporations regarding demographics would allow for exploration of gender differences. Ongoing utilization of classification systems for work related issues would allow for additional results increasing comparability across studies. Development of modes to gain additional information and data regarding the onset of issues and disability may allow insight into the directionality of the relationship. Additional data and analyses of this type of data comparing the inter-relationships and co-effects of work related issues and gender as well as type of disability is recommended to be able to make additional contributions to the understanding of factors contributing to disability duration. This specific stream of research is particularly important to assist in the ongoing continuous improvement in best practices for the field of disability management.
References


van der Ploeg, E. & Kleber, R. J. (2003). Acute and chronic job stressors among ambulance
personnel: Predictors of health symptoms. *Occupational and Environmental Medicine*, 60(Suppl. 1), i40-i46. doi: 10.1136/oem.60.suppl_1.i40


Table 1

Variable Frequencies in Sample (N=708)

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Figure 1

Histogram of Total Days Off (TDO) versus Claim count
Table 2

One Way ANOVA Summary

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<td>p</td>
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Table 4
Post-hoc Comparisons TDO and Injury / Illness Classification

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